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| APPLICATION NO.                              | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/832,178                                   | 04/10/2001  | Derek Spock          | SYCMR-036XX         | 8822             |
| 207  | 7590        | 06/01/2005           | EXAMINER            |                  |
| WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP |             |                      | TRAN, DZUNG D       |                  |
| TEN POST OFFICE SQUARE                       |             |                      | ART UNIT            |                  |
| BOSTON, MA 02109                             |             |                      | PAPER NUMBER        |                  |
|  |             |                      | 2633                |                  |

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/832,178

Applicant(s)

SPOCK ET AL.

Examiner

Dzung D Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-7 and 9-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-7 and 9-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-5, 7, 9-11 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. US patent no. 6,512,613 in view of Tai US patent no. 6,275,322.

Regarding claims 1 and 13, in figures 2, 4, 6, Tanaka discloses an optical add/drop multiplexer (31) comprising:

an optical add/drop module configured to receive a multi-wavelength optical input signal ( $\lambda_1 - \lambda_{32}$ ) from an input path (41), provide a multi-wavelength optical output signal ( $\lambda_1 - \lambda_{32}$ ) to an output path (42), and provide dropped traffic comprising at least one dropped wavelength to a first drop path (203, 353a of figure 6), the dropped traffic being removed from the multi-wavelength optical input signal ( $\lambda_1 - \lambda_{32}$ ); and an optical signal de-multiplexer coupled between the first drop path (203, 353a of figure 6) and a second drop path (353b of figure 6), the optical signal de-multiplexer being configured to receive the dropped traffic from the first drop path, separate at least one selected dropped wavelength from the dropped traffic, and provide the selected dropped wavelength to the second drop path for subsequent processing. Tanaka differs from

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claims 1 and 13 of the present invention in that Tanaka does not specific discloses the de-interleaver wherein the optical signal de-interleaver has an architecture comprising a plurality of hierarchical levels least one optical signal de-interleaver module being disposed in each of the hierarchical levels and wherein at least one selected dropped wavelength is accessible at each hierarchical level of the de-interleaver architecture for subsequent provision to the second drop path. Tai discloses an deinterleaver (figure 13, element 1300) wherein the optical signal deinterleaver has an architecture comprising a plurality of hierarchical levels (level of deinterleaver 1310 and level of deinterleaver 1320, 1330) at least one optical signal deinterleaver module (1310, 1320, 1330) being disposed in each of the hierarchical levels (col. 13, lines 48-59) and wherein at least one selected dropped wavelength ( $2j+1$  or  $2(j+1)$  at level of deinterleaver 1310 and  $4k+1$  or  $4k+2$  at level of deinterleaver 1320) is accessible at each hierarchical level of the de-interleaver architecture for subsequent provision to the second drop path (see figure 13). Since the deinterleaver is well known in the art for selectively de-multiplex the multiplex optical signals into a predetermined group of channels in the DWDM system, it would have been obvious to an artisan at the time of the invention was made to replace the deinterleaver taught by Tai with the de-multiplexer in the system of Tanaka. One of ordinary skill in the art would have been motivated to do this in order to reduce the channel crossing interference signal or crosstalk due to narrow spacing between the channels in the high speed, large capacity optical communication system.

Regarding claim 3, Tai discloses at least one optical signal deinterleaver module (1310, 1320, 1330) disposed in each of the hierarchical levels includes a single input port (1305), and a plurality of output ports (1340, 1350, 1360, 1370, see figure 13).

Regarding claims 4 and 14, Tai further discloses in figure 13, the deinterleaver 1310 with two output ports, one output for a group of even channels  $2(j+1)$  and the other for a group of odd channels  $2J+1$  (col. 13, lines 60-65).

Regarding claim 5, single mode fiber is well known in the art. It would have been obvious to an artisan that whether to impose a single mode fiber or a multiple mode fiber is merely an engineer design choice.

Regarding claims 7 and 15, in figures 2, 4, 6, Tanaka discloses an optical add/drop multiplexer (31) comprising:

an optical add/drop module configured to receive a multi-wavelength optical input signal ( $\lambda_1 - \lambda_{32}$ ) from an input path (41), provide a multi-wavelength optical output signal ( $\lambda_1 - \lambda_{32}$ ) to an output path (42), and receive add traffic including at least one selected added wavelength from a first add path (314b), the add traffic being inserted into the multi-wavelength optical input signal; and an optical signal multiplexer coupled between the first add path (314b) and a add path (314a, 104) and configured to receive the at least one selected add wavelength ( $\lambda_1 - \lambda_8$ ) from the respective second add path, in the event the at least one selected add wavelength comprises a plurality of selected add wavelengths, combine the plurality of selected add wavelengths to generate the add traffic, and provide the add traffic to the optical add/drop module by way of the first add path for subsequent processing. Tanaka differs from claims 7 and 15 of the

present invention in that Tanaka does not specific discloses the interleaver wherein the optical signal interleaver has an architecture comprising a plurality of hierarchical levels at least one optical signal interleaver module being disposed in each of the hierarchical levels and wherein at least one selected added wavelength is accessible at each hierarchical level of the interleaver architecture for subsequent generation of add traffic. Tai discloses the interleaver (1400 of figure 14) wherein the optical signal interleaver has an architecture comprising a plurality of hierarchical levels (level of interleaver 1430 and level of interleaver 14100, 1420) at least one optical signal interleaver module (1410, 1420, 1430) being disposed in each of the hierarchical levels and wherein at least one selected added wavelength ( $4k+1$ ,  $4k+2$  at level of interleaver 1410 and  $2j+1$ ,  $2(j+1)$  at level of interleaver 1430) is accessible at each hierarchical level of the interleaver architecture for subsequent generation of add traffic (see figure 14). Since the interleaver is well known in the art for selectively multiplex the predetermined group of channels into a multiple optical signal, it would have been obvious to an artisan at the time of the invention was made to replace the interleaver taught by Tai with the multiplexer in the system of Tanaka. One of ordinary skill in the art would have been motivated to do this in order to reduce the channel crossing interference signal or crosstalk due to narrow spacing between the channels in the high speed, large capacity optical communication system.

Regarding claim 9, Tai further discloses at least one optical signal interleaver module (1410, 1420, 1430) disposed in each of the hierarchical levels includes a plurality of input ports (1440, 1450, 1460, 1470, see figure 14) configured to receive

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respective groups of add wavelengths, and a single output port (1480) configured to provide an optical signal comprising the received added wavelengths (col. 14, lines 18-43).

Regarding claims 10 and 16, Tai further discloses in figure 14, the interleaver 1430 with two input ports, one input for a group of even channels  $2(j+1)$  and the other for a group of odd channels  $2J+1$  (col. 14, lines 44-50).

Regarding claim 11, single mode fiber is well known in the art. It would have been obvious to an artisan that whether to impose a single mode fiber or a multiple mode fiber in the optical system is merely an engineer design choice.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. US patent no. 6,512,613 in view of Tai US patent no. 6,275,322 and further in view of Liu et al. US patent no. 6,208,443.

Regarding claim 6, as per claims above, Tanaka and Tai disclose all the limitation except for the tunable optical filter. Liu discloses the tunable optical filter (abstract, 402, 603, col. 4, lines 57-61, col. 5, line 61). Since tunable optical filter is well known in the art for selectively de-multiplex a multiple optical signal, it would have been obvious to an artisan at the time of the invention was made to include the tunable optical filter taught by Liu in the system of Tanaka and Tai. One of ordinary skill in the art would have been motivated to do this in order to provide the groups of selective channels to designed drop sites.

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4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. US patent no. 6,512,613 in view of Tai US patent no. 6,275,322 and further in view of Bergano US patent no. 6,459,515.

Regarding claim 12, as per claims above, Tanaka and Tai disclose all the limitation except for a tunable laser. Bergano discloses a tunable laser (301<sub>1</sub>, 301<sub>2</sub>, ... 301<sub>N</sub>, col. 3, lines 47-54). Since tunable laser is well known in the art for generate a plurality of optical data signals, each having a different wavelength. Therefore, it would have been obvious to an artisan at the time of the invention was made to include the tunable optical laser taught by Bergano in the system of Tanaka and Tai. One of ordinary skill in the art would have been motivated to do this in order to provide a plurality optical signal in sequential order.

### ***Response to Arguments***

5. Applicant's arguments filed on 12/30/2004 have been fully considered but they are not persuasive.

**A Rejection of claims 1, 3-7 and 9-16 under USC § 102(e) as being unpatentable over Tanaka et al. US patent no. 6,512,613 in view of Tai US patent no. 6,275,322.**

Applicant argues that Tanaka and Tai references do not disclose or suggest a new amended limitation wherein at least one selected dropped wavelength is accessible at each hierarchical level of the de-interleaver architecture for subsequent provision to



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the second drop path as recited in claims 1 and 13. However the combination of Tanaka and Tai clearly disclose in figure 13, at least one selected dropped wavelength ( $2j+1$  or  $2(j+1)$ ) at level of deinterleaver 1310 and  $4k+1$  or  $4k+2$  at level of deinterleaver 1320) is accessible at each hierarchical level of the de-interleaver architecture for subsequent provision to the second drop path (see figure 13).

Applicant further argues that Tanaka and Tai references do not disclose or suggest wherein at least one selected added wavelength is accessible at each hierarchical level of the interleaver architecture for subsequent generation of add traffic as recited in claims 7 and 15. However the combination of Tanaka and Tai clearly disclose in figure 14, at least one selected added wavelength ( $4k+1$ ,  $4k+2$  at level of interleaver 1410 and  $2j+1$ ,  $2(j+1)$  at level of interleaver 1430) is accessible at each hierarchical level of the interleaver architecture for subsequent generation of the add traffic.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung D Tran whose telephone number is (571) 272-3025. The examiner can normally be reached on 9:00 AM - 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dzung Tran  
05/25/2005

  
**M. R. SEDIGHIAN**  
**PRIMARY EXAMINER**